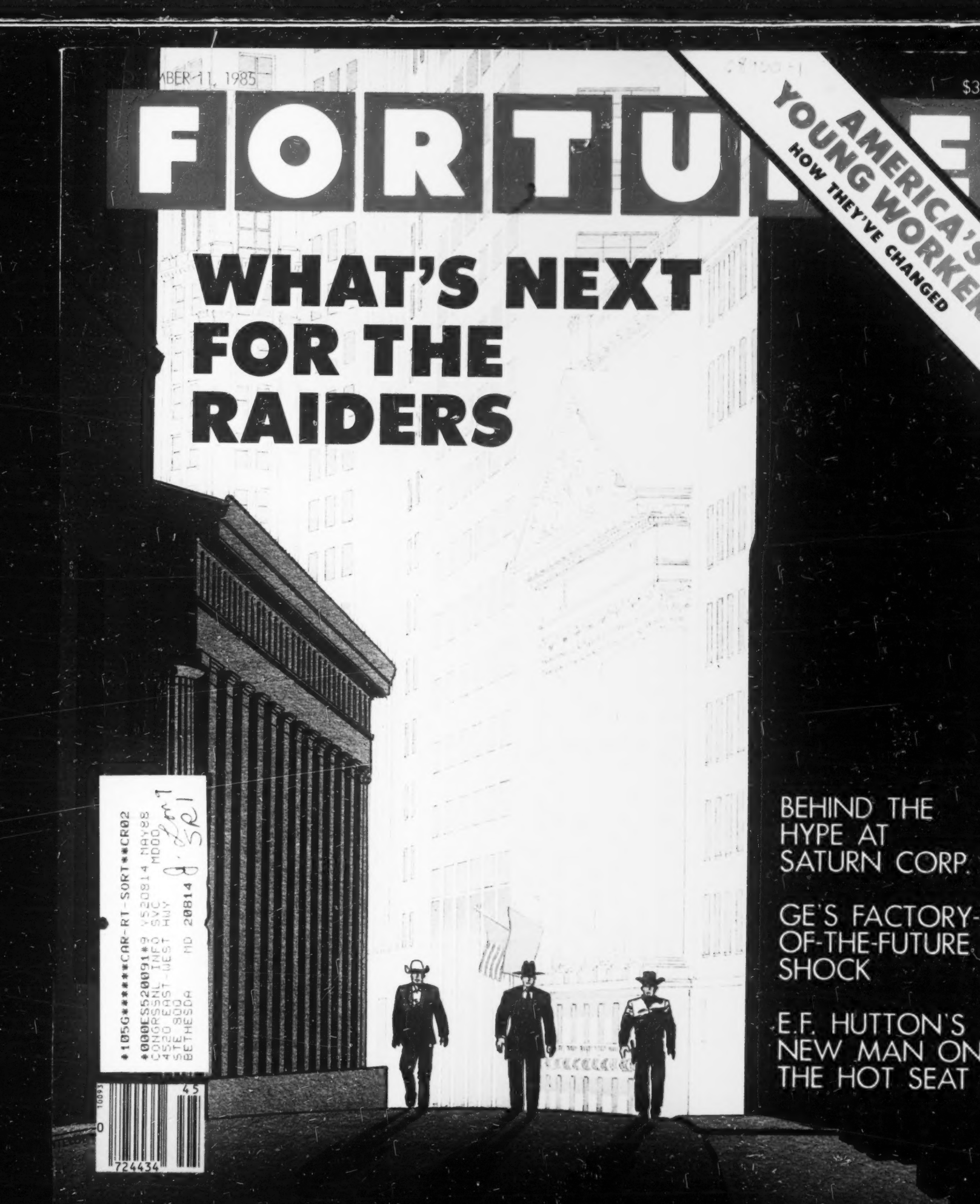
MBER 11, 1985

FORTUNE

AMERICA'S YOUNG WORKERS
HOW THEY'VE CHANGED

WHAT'S NEXT FOR THE RAIDERS



BEHIND THE HYPE AT SATURN CORP.

GE'S FACTORY-OF-THE-FUTURE SHOCK

E.F. HUTTON'S NEW MAN ON THE HOT SEAT

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CORPORATE PERFORMANCE

BEHIND THE HYPE AT GM'S SATURN

The vaunted but vague small-car project will rely on impressive new manufacturing techniques and a high-tech marketing plan. Uncertainties abound, but Saturn stands a good chance of radically narrowing Japan's cost advantage. ■ *by Anne B. Fisher*

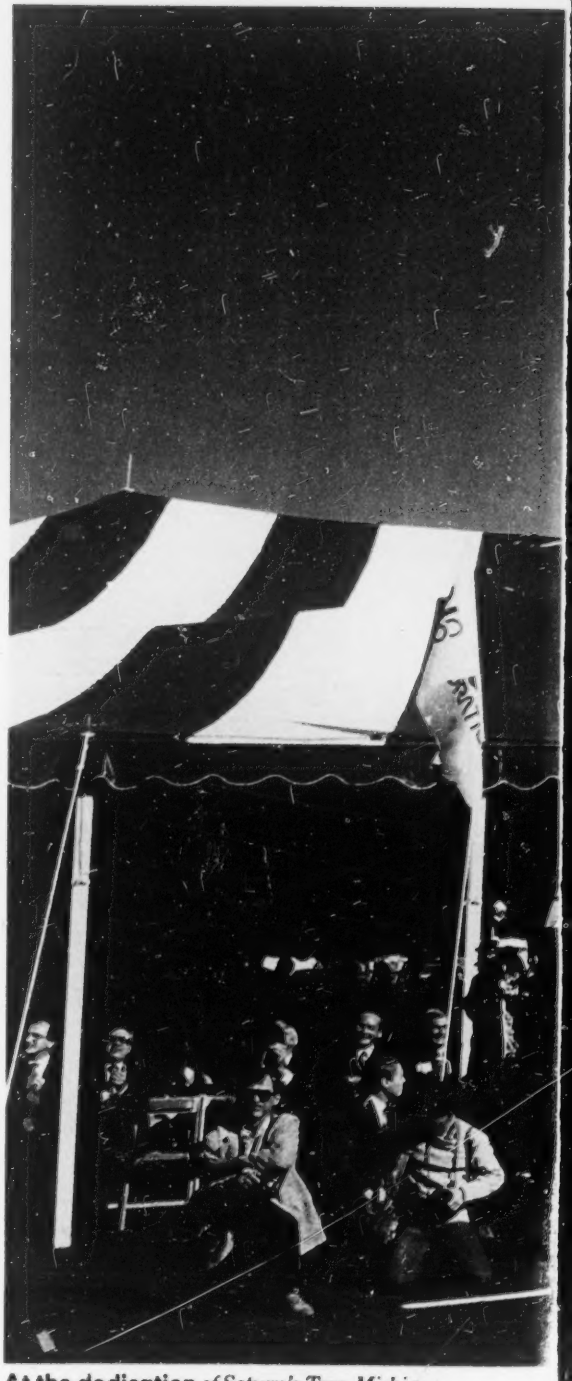
ONE OF THE best-known small cars in America doesn't exist yet. The blaze of publicity surrounding General Motors' hunt for a place to build its proposed Saturn subcompact fired speculation that GM might really be able to produce a little car that could compete in quality and price with Japanese models. Now that GM has chosen Spring Hill, Tennessee, as Saturn's birthplace, a hush has fallen. Executives at the Saturn subsidiary, many of them freshly appointed, aren't talking—although at last count a waiting list of 120 reporters clamored for details about the car GM Chairman Roger Smith calls "a project of cosmic dimensions." Explains a weary Saturn spokesman: "The design of the car isn't final yet. The design of the plant isn't final yet. We've already told the media more than we know ourselves."

That's a bit of an exaggeration. Crucial elements of Saturn are taking shape. From talks with auto industry analysts, consultants, and insiders willing to spill a few beans, FORTUNE has pieced together considerable detail about Saturn's promise—and problems. The project, which represents a determined departure from GM's change-resistant corporate culture, will rely on impressive new manufacturing technology and an innovative high-tech marketing plan. Plenty of uncertainties remain, including the status of Saturn's groundbreaking contract with the United Auto Workers, the appeal of the car, and the likely state of the small-car market into which it will be launched.

The ultimate uncertainty is whether GM can match the Japanese in the small-car business. Some skeptics doubt that it even intends to try. They note that General Motors will spend $3.5 billion to build the Saturn plant in Spring Hill, about six times the $600 million GM just spent to construct its Hamtramck assembly plant in Detroit, now considered one of the world's most technologically advanced. Even at a production capacity of 500,000 cars a year, about twice that of Hamtramck, and regardless of how much labor costs are trimmed, the critics figure Saturn's astronomical fixed costs will make the car substantially more expensive to build than a Chevette. Since the Chevette already costs about $2,000 more in the making than a comparable Toyota (see chart), they wonder how Saturn can catch up.

What the company really intends, according to this argument, is to use Saturn as a laboratory to develop new technology for mid-size and big cars, where profits are fatter and the Japanese haven't yet got a stranglehold on the market. Thus Saturn, the car, may be a decoy intended to win political and union concessions while diverting attention from GM's plans to bring plenty of small cars into the U.S. from the factories of its Japanese partners, Isuzu and Suzuki, and some from South Korea's Daewoo.

Other auto industry experts are less suspicious. Martin Anderson, former director of the Future of the Automobile Program at MIT and now a private consultant, thinks Roger Smith truly wants to build small cars efficiently in the U.S. and that Saturn stands a good chance of pulling it off. "They can lose money on the car for a while and still have the project be a success," says Anderson. "After all, $5 billion is a normal investment for a whole new car line, and that generally takes seven to 12 years to amortize." The key, according to Anderson and other analysts, will be Saturn's ability to cut costs



At the dedication *of Saturn's Troy, Michigan,*

RESEARCH ASSOCIATE *Sarah Smith*

corporate headquarters, GM Chairman Roger Smith (center) and Michigan Governor James Blanchard applaud Saturn President William Hoglund.

in the subassembly and assembly of the cars.

When the first Saturn car rolls out of the Spring Hill plant in 1989, it will embody every new cost-slashing technique GM can come up with. Most of the new processes are aimed at chopping back labor costs. David Cole, director of the Office for the Study of Automotive Transportation at the University of Michigan, estimates that Japanese carmakers now put about 100 hours of labor, including suppliers' labor, into each small car they build. That's about half the time U.S. automakers require. Cole thinks Saturn could build a car in 40 hours, or even 30, saving hundreds of millions of dollars each year. At Spring Hill the construction of modules, such as seats and instrument panels, which are then attached to a car's frame, probably will be done by outside suppliers. In conventional auto plants, subassembly is often done on the line, where the cost of labor averages $23 an hour (including benefits). At suppliers, the same labor costs as much as 50% less.

Saturn will save more hours, and dollars, by eliminating the old-fashioned assembly line. In most auto factories a car's frame moves along miles of conveyors, getting a different part at each work station—and passing through each station whether or not it needs the particular feature the station supplies. The Saturn plant will be built with an automatic guided vehicle (AGV) system

instead. Rather than riding on a conveyor, each car will be mounted on a cart that will follow a network of wires embedded in the floor. The wires will carry electronic orders to take each car only to those stations where it has to go. The AGV system could improve product quality too. Because every assembly line moves at a predetermined speed, a car sometimes slips away from a worker before he has a chance to do his job right. With Saturn's AGV system, each car will stay at each station until it gets what it needs. Just a couple of extra seconds could help reduce the number of annoying little flaws that have plagued U.S.-made subcompacts.

In a joint venture with the Japanese robot maker Fanuc, GM has been developing supersmart machines to save labor and boost product quality. Saturn is also buying high-tech equipment from outside suppliers. One such machine, developed by Perceptron Inc., a Michigan electronics company, is already in place at the Hamtramck plant. It's a 122-laser camera that measures sheet-metal tolerances to within one ten-thousandth of an inch. The camera can help ensure that body-panel fit, one area in which the Japanese excel, will be virtually impeccable—not only to the lasers but to the customer's naked, not to mention jaundiced, eye.

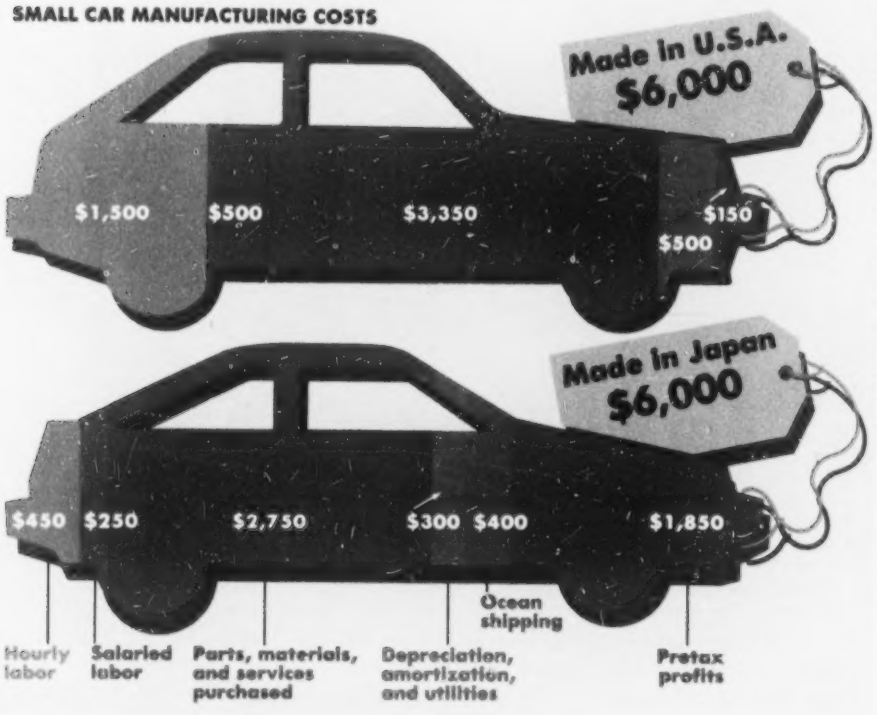
Saturn's labor-saving techniques won't be perfected overnight. A planned robotic loading dock, for example, may take a while to debug. Using vision electronics, robots that can "see" will be programmed to unload trucks full of parts as they pull up to Saturn's doors. A seeing robot is already on the job at GM's Buick City plant in Flint, Michigan. Does it work? "Well, it requires precision timing," confides a GM executive. "If the robot reaches for a part that isn't there yet, the system shuts down."

Even assuming GM can invent a robot with enough sense to wait until the truck shows up, Saturn's ability to eliminate human labor isn't unlimited. Roger Smith talks of Saturn as a "paperless company" where electronic systems—to be developed by EDS, the Dallas software company GM bought last year—will replace mountains of paperwork and legions of clerical staff. As an example, Smith cites Saturn's paperless expense account system, which allows executives to do expense reports on desktop terminals, then flash them to the accounting department. But the most cumbersome part of expense account reporting is the pile of receipts the IRS requires companies to hold for three years. Someone has to tally up the receipts, file them, and move them around. Saturn will do that the same old way.

GM'S COST SLASHING won't stop at the company's own doors. According to some studies, distribution accounts for 25% or more of the cost of a small car. GM is determined to cut that down by trying out a new system at Saturn. Although Chevrolet dealers will be offered first dibs on Saturn franchises, the cars probably will be sold separately from current dealerships. That's intended, in part, to improve quality. On customer satisfaction surveys, which include questions about whether a dealer repaired a car correctly on the first try, GM does not score well. "We have very little control over dealer performance, and it is frustrating as hell," says a high-ranking GM executive who asked not to be named. "With Saturn we're free to try something different." Roger Smith has warned that Chevy dealers with histories of customer complaints can forget about selling Saturns.

Until now, GM and other U.S. carmakers have been slow to capitalize on their one obvious distribution advantage: their factories are closer geographically to American customers than most Japanese plants are. To make the most of that, Saturn is developing a computer system that will let customers order a Saturn by pushing buttons on a computer terminal at a Saturn dealership. The order, complete with whatever options the customer has chosen, will go into the computers at Spring Hill. Within hours, the factory will begin to build the car. Roger Smith says a customer will probably wait no longer than two weeks, wherever he may be in the U.S., for delivery of his custom-made Saturn.

Like most of the technology Saturn will depend on, the software to order a custom-made GM car already exists. EDS developed it, and Chevrolet started giving away the diskettes to home computer users in California earlier this year. Called Chevy Tech, the program is aimed at consumers thinking of buying a Chevy Cavalier, Celebrity, Camaro, S-10 pickup truck, or S-10 Blazer. The software lists the available combinations of fea-



Anatomy of Japan's Cost Edge

How big is the small-car cost gap between the U.S. and Japan? Depending on who does the estimating, numbers vary from $1,000 to $3,000; the most widely accepted figure is around $2,000. Auto industry analysts agree that despite years of effort, profits of the Big Three American automakers on little cars like the Chevy Chevette and the Ford Escort are still subcompact. Lean Japanese labor costs are a major reason for the far higher profits on a Toyota Corolla or a Honda Civic. With Saturn—whose price is also expected to be about $6,000—GM will try to match the Japanese.

A spirit of cooperation *was reflected in the contract UAW Vice President Donald F. Ephlin (above) helped engineer for Saturn. It may not last.*

tures and options on the various models. By popping a diskette into his Apple II computer, the user can assemble the car he wants, and get an idea of its price, before he goes out to see a dealer.

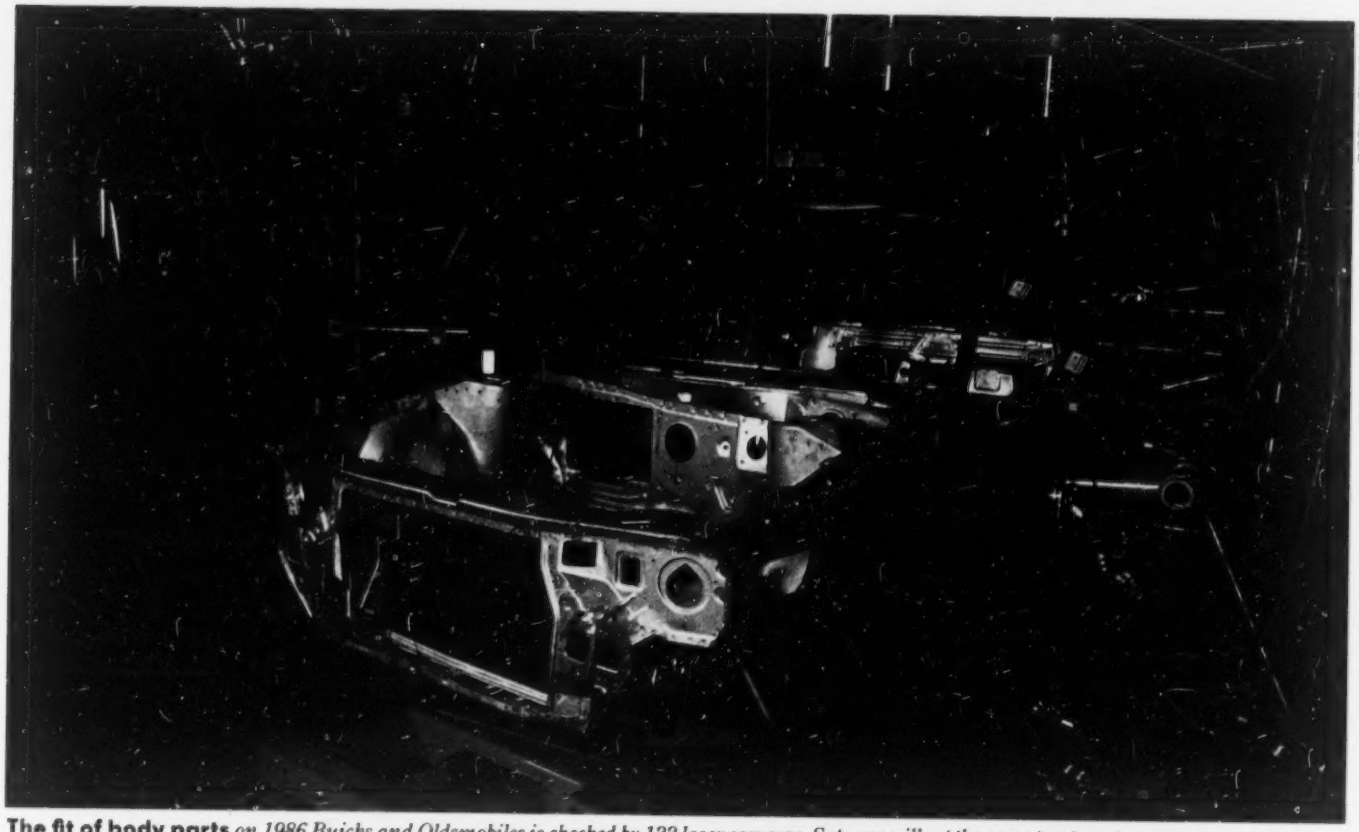
FOR SATURN dealers, the beauty of paperless ordering would be far lower overhead. Rather than stockpiling 100 cars or more, typically financed at two percentage points above the prime lending rate, a dealer would need just one or two cars on hand as demonstration models. A Saturn franchise could thus be more efficient than the sprawling premises dealers usually need. Saturn executives have hinted that perhaps a small storefront in a shopping mall would do. With his costs pared, a Saturn dealer could make a comfortable return without a big dealer markup—another salvo in GM's fight to make Saturn price-competitive against imports without sacrificing profits.

Saturn expects to achieve other big cost reductions in low-tech, commonsensical ways. Take shipping costs. John Debbink, until recently GM's vice president of materials management, says total transportation costs, including the expense of moving parts from far-flung suppliers to GM's assembly plants, frequently exceed even direct labor costs as a proportion of manufacturing expenses. Saturn will change that by including under one roof the plants that will make virtually all major parts of the car. The complex, when it's completed in about two years, will cover six million square feet, or about 140 acres. Besides the car factory itself, it will be home to a stamping plant to make metal parts, an engine plant, a forging operation to supply parts to the engine plant, and perhaps even a factory to turn out plastic parts. Locating suppliers close at hand, as Toyota and other Japanese automakers have done, not only eliminates the substantial cost and possible damage involved in moving heavy parts over long distances. It also makes Japanese-style just-in-time inventory management more practical. There's no need to stockpile parts if a shortfall can be corrected in five minutes rather than five hours or five days.

U.S. carmaking technology is now far more capital-intensive than that of Japanese competitors, and the gap is likely to grow as American companies add increasingly agile automation (FORTUNE, October 28). Yet heavy spending on electronic gadgetry is no guarantee that Detroit can succeed in the small-car game. Says James Harbour, a Michigan consultant who has extensively studied U.S. and Japanese automaking costs: "Seventy percent of the problem with American auto companies isn't technology related. It's management related." By comparison with Japanese automakers, U.S. car companies have long been top-heavy, bureaucratic, and shot full of antagonism between management and labor.

As an attempt to change all that, arguably its most crucial mission, Saturn Corp. is off to an uncertain start. Faced with the task of carving a lean, egalitarian operation out of GM's hulking hierarchy, Saturn's managers and engineers are feeling "understaffed and overwhelmed," according to one insider. During several recent weeks, for instance, a burning issue among Saturn staffers was whether engineers and managers of a certain rank should get to drive company cars or not.

Saturn-gazers inside and outside GM agree that William Hoglund, 51, who was appointed president of Saturn last February, seems well suited to the task of rethinking GM's ways. Hoglund is a veteran of the Pon-



The fit of body parts *on 1986 Buicks and Oldsmobiles is checked by 122 laser cameras. Saturns will get the same treatment.*

tiac division. He had taken over in 1980 when Pontiac's sales were rusting out. By focusing on younger, better-off customers than Pontiac had wooed in the recent past, and by recasting the Pontiac image to emphasize sporty thrills, he put the division's sales and earnings back in the race. He also picked up a reputation as a smart, imaginative manager who was willing to listen. The Pontiac Fiero, a sporty two-seat, mid-engine car introduced in 1984, was originally supposed to be called Sunfire. But assembly-line workers building the car complained that Sunfire was a wimpy name. Hoglund went to the plant, talked with the workers, and decided they had a point.

At Saturn he'll be doing a lot more listening. A major part of Saturn's bid for Japanese-style efficiency involves a process known as simultaneous engineering. In the past GM's design engineers often drew up blueprints for new models without consulting the manufacturing engineers charged with building the cars or the marketers charged with selling them. The disadvantages, in hindsight at least, were obvious: the auto that came off the line usually had been altered somewhat—not always for the better—because of practical considerations the designers hadn't thought of. And the marketing staff would be given a product that wasn't quite what dealers said customers wanted. Simultaneous engineering is intended to avoid those problems by getting everyone working together from the outset. It's a sensible idea, though not one that Saturn staffers, mostly veterans of the old GM culture, have had much practice with. "Anytime you make a change like this, you have a few people who want to squabble over turf," observes a close Saturn-watcher. "But so far, it's gone pretty smoothly."

INDEED, the skirmishes over turf may prove to be nothing compared with the possible battle between Saturn and the United Auto Workers. Intent on negotiating a contract for Saturn that would cut labor costs without incurring workers' wrath, GM took the unprecedented step of inviting the UAW in on the planning of the Saturn project back in December 1983. It was the first time—despite requests from the UAW dating back to the 1950s—that the union had been allowed to participate in any kind of corporate planning at GM, and both sides came to the table in a conciliatory mood. The result was an innovative contract, signed last July. The UAW agreed to give up restrictive work rules that hamper productivity and to accept guaranteed salaries—not hourly wages—of only 80% of the average wage paid to workers in the rest of the industry. The other 20% would be made up, or not, by profit sharing and an incentive plan based on workers' performance. In exchange, GM promised lifetime job security to 80% of Saturn's workers and offered them a greater voice in decision-making than they've been accustomed to at GM or elsewhere.

Both sides felt they had won, and pundits predicted the Saturn contract would become the model for other labor-management pacts inside and outside the auto industry. "If this succeeds, you could legitimately call it revolutionary," says Martin Weitzman, an economics professor and labor relations scholar at MIT. "The union is recognizing, finally, that the well-being of workers is intrinsically tied to the well-being of the company. They are not trying to pretend these are two different things anymore."

But there is one problem with the Saturn-UAW contract: it may be illegal. The National Right to Work Legal Defense Foundation, a

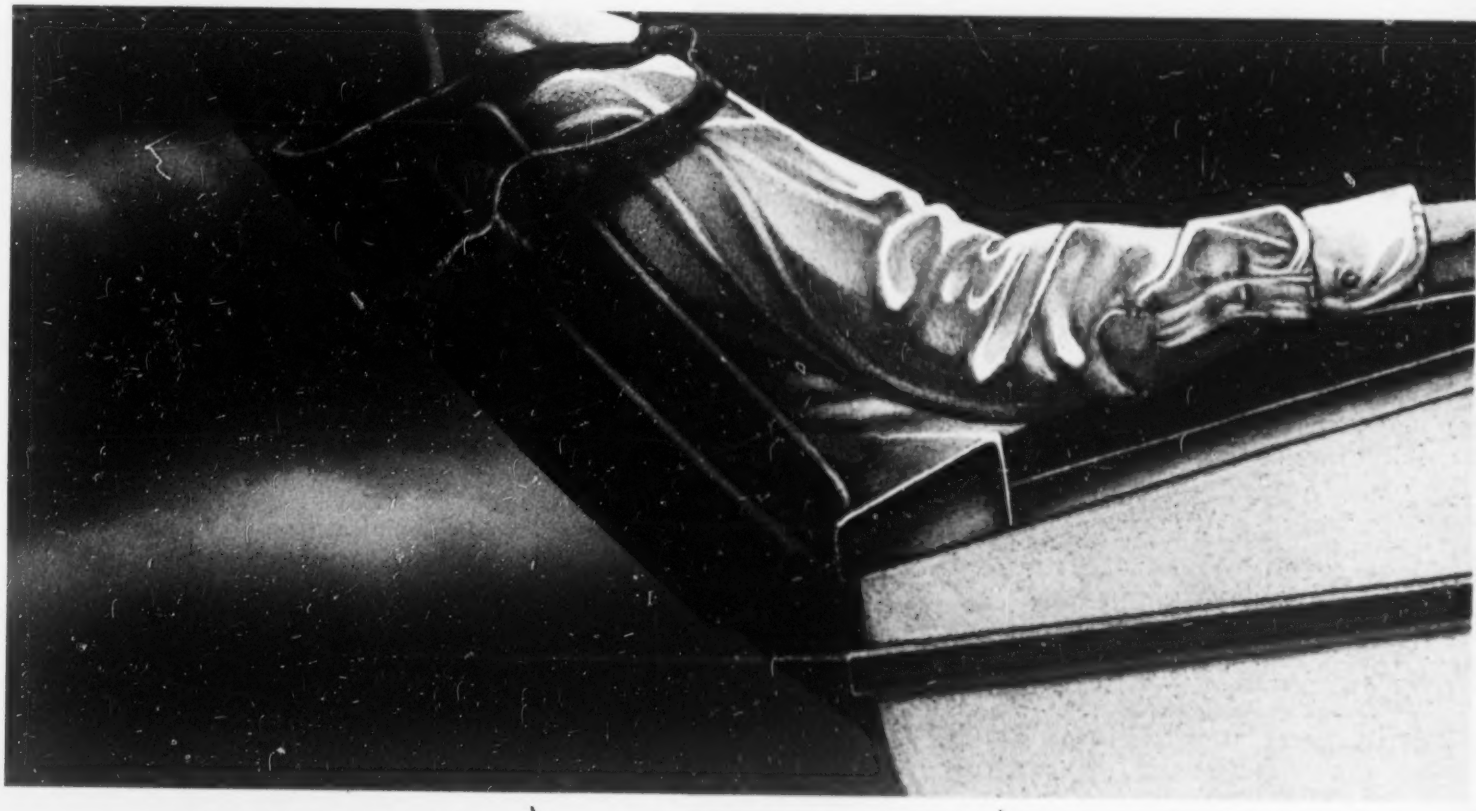
nonprofit group in Springfield, Virginia, that provides legal aid to people who feel coerced into joining unions, noticed that the Saturn pact names the UAW as the collective bargaining agent for all Saturn workers—even though no workers have been hired yet. The contract also says that the "primary source" for recruitment of Saturn workers will be current UAW members; the UAW will represent all Saturn workers, whether or not they join the union. As the foundation sees it, the National Labor Relations Act of 1935 proscribes both provisions. So the Right to Work Foundation alerted the National Labor Relations Board. The agency, which enforces labor laws, intends to schedule hearings soon.

Neither GM nor the UAW cares to comment on the challenge to the contract, except to say, as a Saturn spokesman did, that both are "taking the matter seriously." They will probably argue that Saturn, as a separate corporation from GM, is entitled to a separate contract. But in the same breath they'll argue that in some ways the Saturn pact is only an extension of the agreement GM already has with the UAW, and therefore it's all right to assume that the union will represent Saturn workers. The NLRB has heard other cases of companies wanting their cake and eating it too, but none quite like this. For that reason, according to observers like Edward B. Miller, a former chairman of the NLRB and now a labor lawyer at the Chicago firm of Pope Ballard Shepard & Fowle, it's hard to predict the outcome. Says Miller: "It's going to be a close call."

IF THE NLRB chucks out the Saturn contract, the union stands to lose a good deal more than GM. Because Tennessee is a right-to-work state, nobody has to join a union. The UAW may have a hard time persuading Spring Hill residents eager for Saturn's jobs that they'd be better off paying union dues. Thirty miles up the road in Smyrna, Nissan runs a plant that the UAW hasn't been able to crack. If GM can do without the union altogether, it could cut labor costs even more than the current contract allows and do all its own decision-making besides—just like very old times.

About the car that will emerge from the Saturn project, and presumably determine its success or failure, GM has had little to say. Last January, in a rare and sketchy description, GM allowed that the Saturn would be a subcompact available in two- and four-door models, and that it would seat four people. Presumably the company meant four short people, since the Saturn will be only "slightly larger" than the Chevrolet Sprint, a minicompact GM imports from Suzuki Motor Co. of Japan. Roger Smith also said he expected the Saturn to be more expensive than the $5,000 Sprint. At around the same time, GM trotted out a cherry-red Saturn prototype that President Reagan took for a spin. But that prototype may bear little resemblance to the final product, or even to the prototypes that Saturn is now testing at a Fort Knox-like track southeast of Mesa, Arizona. Predictably, Saturn executives are mum on the matter of the car's looks and features—except to crow, as Bill Hoglund did at a dedication ceremony for Saturn headquarters in October, that it is "an outstanding-looking car."

It had better be. From the beginning GM



has played down the car, saying the new systems used to make and sell it are the project's real glories. However, people don't buy systems, they buy cars. Says Chris Cedergren, an auto researcher at the Los Angeles consulting firm of J.D. Power & Associates: "The product is all important. If Saturn turns out to be another Honda Civic, GM has hit a home run. But if Saturn is a shrunken Chevy Cavalier, they're dead."

Saturn's fate in the marketplace will depend largely on the state of the marketplace itself. By 1989, just as the first Saturn cars hit the road, most auto analysts expect a harrowing price war in small cars, similar to the one that has wrecked Japanese automakers' profits in their home market for the past several years. The cause will be the same: too many little cars chasing too few customers.

Many of those cars will come from Japan, now that import restraints are easing. By 1988 Toyota, Mazda, and Mitsubishi will be building cars on American soil. Nissan and Honda are already here. Hyundai, a Korean carmaker, swept into Canada last year with two small cars: the Hyundai Pony and the Stellar. Together they have become Canada's best-selling auto imports, seizing 22% of the market within the first eight months of 1985. Hyundai will head for the U.S. with another small car, the Excel, in 1986. Security analysts think cars like the Yugo GV, the $3,990 minicar from Yugoslavia that recently went on sale in America, may also chip away at sales of higher-priced subcompacts. According to a study by Howard Leonard, an auto analyst at Provident National Bank in Philadelphia, 25% of cars sold in the U.S. last year were imports or "immigrants"—products of foreign companies, but built here. Leonard says the percentage will double by 1989.

The proliferation will come at a time when demand is unlikely to grow enough to absorb the number of cars manufacturers will be peddling. A report by J.D. Power & Associates shows just under 1.9 million sales of cars priced between $5,000 and $9,000 in 1984. By 1991, Power's forecast says, the number will grow to 2.5 million—an increase that would soak up only about half the extra new cars likely to be around then. Says researcher Cedergren: "We are expecting a lot of price competition with heavy discounting—and the worst of it is going to hit in the $5,500 to $7,000 range." That could put Saturn, which is supposed to sell for about $6,000, directly in the line of fire.

It won't be clear for years whether GM's Saturn gamble will yield a cost-competitive small car that consumers will want to buy. But using a combination of new technology and old Japanese know-how, the odds are good that Saturn can come close. In the process, GM will teach itself—and the rest of the auto industry—quite a lot about how to run a car company in the 21st century. F

INVESTOR'S SNAPSHOT

GENERAL MOTORS

SALES (LATEST FOUR QUARTERS)	**$88.7 BILLION**
CHANGE FROM YEAR EARLIER	UP 7%
NET PROFIT	**$3.5 BILLION**
CHANGE	DOWN 33%
RETURN ON COMMON STOCKHOLDERS' EQUITY	**14%**
FIVE-YEAR AVERAGE	8%
RECENT SHARE PRICE	**$69.75**
PRICE/EARNINGS MULTIPLE	**6**
TOTAL RETURN TO INVESTORS (12 MONTHS TO 10/11)	**−3%**
PRINCIPAL MARKET	**NYSE**

Explanatory notes: page 194

NOT ↘. YOU'LL BE AMAZED WHAT IT DOES TO THE REST OF YOU. LEADING THE WAY. TWA.